

We claim:

- 1 1. A method for lighting an inductive plasma in a plasma  
2 processing apparatus having a matching network, the method  
3 comprising the steps of:  
4     determining a matching condition under which the matching  
5 network is tuned to a capacitive plasma;  
6     presetting the matching network at the matching condition  
7 determined in said determining step;  
8     lighting a capacitive plasma in accordance with the preset  
9 matching condition and at a desired power exceeding a power  
10 required to maintain the capacitive plasma by an excess power;  
11 and  
12     allowing an inductive plasma to light due to the excess  
13 power.
- 1 2. A method according to claim 1, wherein the plasma lit in  
2 said lighting step is a second plasma, and said determining  
3 step further comprises:  
4     lighting a first plasma;  
5     setting a power delivered to the first plasma at not more  
6 than about 20 watts;  
7     allowing the matching network to tune to the first plasma  
8 as a capacitive plasma; and  
9     recording the matching condition under which the matching  
10 network is tuned to the first plasma.
- 1 3. A method according to claim 1, wherein the plasma  
2 processing apparatus includes a coil for delivering power to  
3 the plasma, and a current produced in the coil due to the  
4 excess power causes the inductive plasma to light.

1 4. A method according to claim 1, wherein the matching  
2 condition determined in said determining step is a condition  
3 under which the capacitive plasma is maintained in a steady  
4 state.

1 5. A method according to claim 1, wherein the inductive plasma  
2 is lit in a chamber of the plasma processing apparatus having a  
3 gas pressure in the range of approximately 0.3 mTorr to 20  
4 mTorr.

1 6. A method according to claim 1, wherein after said lighting  
2 step, the matching network changes from the preset matching  
3 condition to a matching condition under which the matching  
4 network is tuned to the inductive plasma.

1 7. A method according to claim 1, wherein the desired power is  
2 greater than about 20 watts.